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careful observation to show that these fragments of human manufacture and the fossil bones are coeval, though certainly their appearance favours that opinion.

If, however, this point should not be established, yet looking only to the great length of time required to convert bones into a fossil state, we have still every reason to conclude that, in this stable continent, which has through long ages been subjected to atmospheric influences only, the negro type of mankind must be one of very high antiquity. Yet notwithstanding this antiquity, the people of that race have made slight advances in civilization, or in the commonest arts of life, as compared not only with the people of the Caucasian type, but also with those of the Mongolian and Malayan races, or even with the Red Indian and Polynesian races.*

XIV.—*Expedition across the Southern Andes of Chili, with the object of opening a new Line of Communication from the Pacific to the Atlantic Ocean, by the Lake of Nahuel-Huapi and the Rivers Limay and Negro.* By DON GUILLERMO COX, of Chili. (Translated from the Spanish, and communicated by SIR WOODBINE PARISH, K.C.H., F.R.S.)

Read, May 9, 1864.

[THE following paper is extracted from the Diary (in Spanish) of Don Guillermo Cox, a Chilian born, though of British parentage, who, possessed of independent means which enabled him to carry out his object, determined, towards the close of 1862, to make an exploration of the least known parts of the Andes south of Valdivia, in the hope of being able to open a new line of communication across Patagonia between the Pacific and Atlantic Oceans.

The Spanish Government, so long ago as 1782, were desirous to ascertain the practicability of such a route; not from any idea of the benefit which might accrue from it to their own people, but in order to ascertain whether or not, in case of war, any hostile power, and especially the English, by passing up the great River Negro, were likely to be enabled to reach their settlements on the coasts of the Pacific. A competent officer, Don Bazilio Villarino, was ordered to make a careful survey of the whole course of the river in question, and of the passes across the Andes which were supposed to lead direct to Valdivia, from its upper affluents.

Villarino ascended the river, not however without much labour and

* For an extension of this view of the stationary condition of the negro during a very long period, see my last Anniversary Address, 'Proceedings of the Royal Geographical Society,' vol. viii. p. 248.

many difficulties, in consequence of the low state of the water in the dry season, and reached the foot of the Cordillera. He there found that the Negro was derived from two streams, one running into it from the north, the other from the south ; of the latter, which he named the Rio de la Encarnacion (the Limay of the Indians), he contented himself with a very slight examination, rowing up it only a few miles, having learnt from the Indians that it proceeded from the Lake of Nahuel-Huapi, which they described as far to the south of Valdivia.

He then proceeded up the northern branch, called the Catapuliche, till he arrived at a point nearly opposite to Valdivia, which city, the Indians assured him, he might easily reach by a pass well known to them in about four days. A quarrel, however, with the natives obliged him to return without accomplishing his object of crossing the Cordillera.

It seems hardly credible that since that time the river Negro should have never again been ascended beyond the island of Choleechel, which is about halfway up it. In the year 1833 the Buenos-Ayorean pilot, Delcalzis, ascended as far as Choleechel, under the orders of General Rosas.

Sir Woodbine Parish brought to England the original M.S of Villarino's diary, and published it in the 6th volume of the Journal of the Royal Geographical Society ; from this Mr. Arrowsmith laid down the true course of the river, showing its connexion, according to the Indian accounts, with the Lake of Nahuel-Huapi, of which little more was known than the fact that in 1670 and subsequently in 1715, the Jesuits had established missions there, which not long after were destroyed and the Fathers put to death by the Indians, in alarm, as is supposed, lest the Spaniards should invade their lands by a pass which the missionaries had discovered and opened through the forests from the Bay of Reloncavi, and by which, as is asserted, they were able to reach their establishment on the lake from the coast in the short space of *three* days.

The road in question is known traditionally as the "*Camino di Bariloche*," and is supposed to run pretty nearly in the direction marked upon Mr. Cox's map ; the forests through which it ran have long ago grown over and obliterated all trace of it ; but if it be true, as asserted, that it required but three days for the missionaries to traverse it, there must be a much greater depression in that part of the Andes than has hitherto been observed, or at any rate some opening through them of much easier access than any of the passes as yet discovered across the Cordillera, a supposition which it is of the greatest interest to verify.

No further attempt to reach Nahuel-Huapi was made until, in the year 1792, a Spanish priest, Father Melendez, started with a party from the coast to ascertain whether any traces of the old mission

were still to be found. They reached the lake of Todos Santos, which they traversed in a boat of their own building, crossed the Cordillera, and succeeded in reaching the lake of Nahuel-Huapi, where some Indians pointed out the site of the old buildings they were in quest of.

A perpetual fear of the indomitable Araucanians seems to have operated as an effectual bar to any further examinations of those regions during the rule of the old Spanish Government. But the successful planting of a German colony by the present Government of Chili, about twelve years ago, at Port Montt, lat. $41^{\circ} 30' S.$, in the Bay of Reloncavi, appears to have led to several attempts on the part of the colonists to collect information not only respecting the lands in their own immediate vicinity, but also those on the opposite side of the Cordillera. The old story of the mission of Nahuel-Huapi was revived, and several attempts were made to reach it. Of these, one of the most successful, was a journey made in 1855 by Don Vicente Gomez, the grandson of an old man settled at Port Montt, who had accompanied Melendez in his expedition of 1792, and was in consequence able to give him much useful information for his guidance. Gomez succeeded in passing the Cordillera by the pass or gorge which he named the *Boquete di Rosalez*, after the Intendant of the colony; and from Mount Esperanza he obtained a distant view of the Lake of Nahuel-Huapi. In the year following Mr. Fonk, the Doctor of the colony, reached the lake by the same route, and returned to Port Montt with many interesting details respecting it. His countryman, Mr. Doll, has given an account of some of these explorations, in the '*Araucano*,' a Chilean periodical, and has embodied their results in a map, which has the merit of giving the relative positions of Mount Osorno and Calbuco, for the first time correctly.

Six years later, after a careful study of all the information so collected, and some practical experience acquired in a journey made by himself as far as the Cordillera, Señor Cox determined to make an effort to solve, if possible, the grand problem of the practicability or not of passing from the lake into the River Negro, and thus of opening a new line of communication across the continent from the foot of the Chilean Andes. The results are given in a volume which he has lately published in Chili, containing very full details of his journey and personal adventures, as well as information of great interest regarding the physical geography, geology, and botany of the country he traversed, and of the habits and customs of the wretched Indian tribes who still haunt the eastern slopes of the Chilean Andes.

From this has been prepared the accompanying paper, with a view to giving at least some general idea of what has been accom-

plished by this enterprising traveller through lands hitherto unknown in Europe.—W. P.]

IN the month of May, 1862 (says Señor Cox), I proceeded to Port Montt, on the bay of Reloncavi, with M. Lenglier, an intelligent young Frenchman, an *élève* of the Polytechnic School, to make the final arrangements for my journey across the Andes, and considered myself fortunate in being able to secure the services of Don Vicente Gomez, who in 1855 had reached Mount Esperanza, from whence he had obtained a distant view of the lake of Nahuel-Huapi. My party altogether numbered sixteen persons, nine of whom I engaged with Gomez to accompany me across the Cordilleras as far as the lake; the rest were to remain with me to the end of my expedition.

I had with me gutta-percha boats, several life-preservers, muskets and ammunition, carpenters' tools, and all that was requisite for the building of boats to navigate the lakes. My instruments were a barometer, two thermometers, a chronometer, and an instrument for taking altitudes; and lastly, though not the least important, as it proved, a guitar and flageolet to amuse the men in the evenings. Our stock of provisions consisted chiefly of roasted maize, charqui (prepared beef), flour, and salt, besides seventeen live goats and two sheep.

On the 7th December, 1862, I proceeded with my party on horseback to the lake of Llanquihué, which we were to cross in a boat sent up the river Maullin for the purpose. This is rather more than 200 English feet above the sea, and is the first of a remarkable chain of lakes situated one above the other in succession on the plateaux along the flanks of the Andes: its width is about 18 English miles, its length 24 or 25. The point at its extremity between the volcanoes of Osorno and Calbuco has been fixed at about $41^{\circ} 12'$ s. lat. and $72^{\circ} 29'$ w. long. from Greenwich. It is so deep that no bottom was found with a line of 200 fathoms. Crossing it from west to east on the evening of the 10th December, we landed at the foot of Mount Osorno, between which and Mount Calbuco a long marshy plain extends as far as the lake of Todos Santos.

On the 11th and 12th, whilst the peons went on with the baggage, I determined the heights of Mounts Osorno and Calbuco; the result in both cases being almost identical with those of Captain FitzRoy.

To the northward of our position lay a sterile plain, covered with black scoriæ, which Mr. Doll names in his map the Pass of Desolation. On the flanks of the mountain beyond, five extinct craters were distinctly visible. The last eruption of Osorno was in

1836 or 1837. All the trees on the low marshy land between the lakes of Llanquihué and Todos Santos are of very recent growth, suggesting the inference that the land is of recent formation, and that the two lakes perhaps not long since constituted only one, the separation being caused by some upheaval or current of lava flowing into them during an eruption of the neighbouring volcano.

On the 14th, leaving the shores of Llanquihué, we proceeded through the marshy levels between the two volcanoes till we reached the banks of the river Petrohué, which runs with great violence from the lake of Todos Santos into the bay of Reloncavi. Amongst other objects some basaltic columns here attracted our particular notice.

On the 15th we reached the shores of the lake of Todos Santos, where we had the good fortune to find a boat in tolerable preservation, which I had caused to be built there on a previous occasion when I had got so far in a vain attempt to cross the Cordillera. The aspect of this lake was melancholy enough from the sombre hue of the mountains which surround it. In the midst of it rose an island covered with forest trees, and beyond ran the road over the Cordillera. The silence of nature was only broken by the thundering noise of occasional avalanches from Mount Tronador in the far distance.

The 15th set in with rain and mist: the peons, however, brought up the rest of the baggage and the animals. These Chilians proved themselves capable of enduring extraordinary fatigue on a very small allowance of food: each carried a load of 75 lbs. Their morning meal before starting was seldom more than a handful of roasted corn mixed with water, and a second similar meal served their wants for the rest of the day. On the 19th, after three days of bad weather, I sent forward the greater part of the people in the boat, which, with my gutta percha in tow, altogether made a very respectable little flotilla. They reached the eastern extremity of the lake without more serious accident than the loss of three of the goats. I joined them two days after, with the remainder of the party, at the mouth of the river Puella, where they had established their bivouac. This lake of Todos Santos is 706 English feet above the sea level: it is about 17 miles long and is shut in by mountains rising in peaks on all sides, of which Punttiagudo is the most remarkable, 5900 feet high, and covered with snow to its base.

On the 22nd Gomez volunteered to go on in advance with a party to reconnoitre the road leading to the Boquete, or Pass, which we were to cross, and which they reached in the course of the day, obtaining from it a distant view of Mount Tronador. He took with him the three carpenters, and sent them on to follow the pass to

the lake, with orders to commence as soon as possible the building of the boat in which we were to commence our voyage of discovery.

On the following morning (December 23) the whole party started for the pass, each carrying his load. The day was magnificent. The lofty peak of the Téchado lay on the left, and the River Puella was bubbling at our feet. Innumerable humming-birds were darting to and fro in quest of their food in every direction. On the 24th our march lay for some distance through a dense wood, and afterwards along the bed of the Puella, which in winter must be filled to overflowing, though at this season of December it was but an insignificant stream. We crossed it several times, the water reaching only to our knees: it was very cold, but the air was oppressively hot, $93\frac{1}{2}^{\circ}$ in the shade. In the evening, after a march of about 6 or 7 miles, we encamped on the banks of a little stream, one of the sources of the Puella, at the entrance of Rozalez's Pass (the one we were in quest of), a break in the mountain-range, which it would have been very difficult to find without some previous knowledge of it. On the right Mount Tronador was thundering away, as if to salute us upon our arrival.

On the 25th, whilst the peons returned to their halting-place of the previous day to bring up the remainder of our baggage, I determined the height of the pass (Boquete), taking as a base the valley of the Puella: it was found to be 1098 feet above it. This, added to the 706 feet, the level of the lake of Todos Santos above the sea, and the 990 feet difference between that lake and the point to which we had ascended, and from which my observation was taken, gave in the whole 2794 feet as the height of the pass. Taking a larger base for measuring Mount Tronador, I determined its highest peak to be 9900 feet, more or less. I also endeavoured to fix the limit of perpetual snow, which, however, was not so easy a matter, in consequence of the time of year making it difficult to distinguish the perpetual from the winter snows. As far as I could determine the constant line, it was between 5280 and 5610 feet. Whilst so employed, to my extreme vexation, the carpenters, who I supposed were already at Lake Nahuel-Huapi building our boat, returned frightened, as it appeared, by the exaggerated tales of danger related by a companion, who had accompanied one of the former expeditions. To dispel the fears of the party, I saw there was no alternative but to lead the way myself, which I determined to do the following day. In the afternoon I visited Mount Tronador, from whose side the River Puella has its source. On the 26th we got the whole of the baggage transported across the bed of the torrent, a large tree being cut down and thrown over it for a bridge. The only difficulty here

experienced was in getting the goats to pass it, for the leader, having turned tail, the rest of the flock ran off after him, occasioning considerable delay before we could catch them again.

We had now reached the commencement of the so-called Boquete, the latitude of which I fixed at $41^{\circ} 9'$, just twenty days after leaving Puerto Montt. The morning of the 27th opened with a glorious sunrise, and I led the way to the passage, accompanied by Gomez, the rest of the party following, with the exception of one man, who was left in charge of the goats very much against his inclination, and M. Lenglier, who remained to make a drawing of the pass. Following for a short distance the bed of the torrent we had crossed the day before, we proceeded in single file up a gentle ascent of about 25° through a forest of trees so dense as to hide the sky from our view, nor did we get sight of it again till we reached the top of the pass. The trunks of fallen trees and occasional ravines, which were easily crossed, proved the only impediments in our way, and in three hours the whole party had reached the level of the pass, where we found the vestiges of Dr. Fonk's former encampment in 1856.

From this point, by following the pass, we might at once have descended to the bed of the River Frio, which runs into the Lake of Nahuel-Huapi, but I declined to take this route from the uncertainty as to its being navigable for the gutta-percha boats without risk, and from the impossibility of following its course on foot in consequence of the perpendicular wall-like sides of the gorge through which it runs. I preferred to work our way over the mountains in a north-westerly direction straight for the lake. The ascent was very steep, and rendered more difficult by the bayonet-like icicles which hung from the trees through which we had to force our way. By two o'clock in the afternoon we had reached a small plain, covered with snow, where we halted for half an hour. The forest here was less dense, and there was more air. There was a still steeper rise above us to surmount, and the ground was so slippery from the snow that it was with great difficulty the peons were able to make any progress. They had to hold on by the branches of the trees, and literally to pull themselves up with their loads. At length we all reached the highest point, a level plain between the mountain of Esperanza and that called the "12th of February," covered with snow, and where vegetation had sensibly diminished.

From this point the prospect was most magnificent, at an elevation of about 4950 feet. Looking in the direction of the Valley of the Puella, I could clearly trace the line of the Boquete breaking through the Cordillera far beneath me. To the westward a portion of the lake of Todos Santos was visible, surrounded by mountain-peaks and bounded in the distance by the snow-

capped volcano of Osorno. Thick clouds covered Mount Calbuco. On my left rose Mount Tronador, enveloped in perpetual snow. At my feet were two rivers running in opposite directions; on the one side the River Puella towards the Pacific, and on the other the River Frio meandering through the plains below towards the Lake of Nahuel-Huapi, thence to be carried down the great River Negro to the Atlantic Ocean. In an opposite direction I looked down upon the Lake of the Guanacos, and in the farthest distance beyond I could see the deep blue waters of the Lake of Nahuel-Huapi glistening in the sun like one of the brightest of Nature's gems in the midst of the Andes.

At last, then, I had reached the eastern slopes of the Cordillera, and could see the way open by which I hoped to realise for the first time the possibility of crossing the continent, by almost continuous water-carriage from the Pacific to the Atlantic, the object and aim of my ardent aspirations for so many years.

From this spot, after crossing a plain covered with snow, in which some of the men sank up to their knees, we commenced our descent in the direction of the Lake of Huanacos, which is of a triangular shape, and situated between the mountains Esperanza and "12th February:" we found it covered with ice and snow, except a small open space, on which were some wild ducks. Following its left bank we reached the stream which drains it into the Lake of Nahuel-Huapi. Near this we halted and pitched our tent for the night, the people cutting down wood enough to make a blazing fire, which kept us all warm in spite of the snow by which we were surrounded and a rainy, bad night.

On the following day (Dec. 28) we recommenced our descent, crossed some levels covered with grass, and, passing some rather stiff ravines, came again upon the bed of the river which drains the Lake of Huanacos, and by 11 A.M. the whole party found themselves on the banks of the Lake of Nahuel-Huapi. In the afternoon I sent back the peons to the Puella, and set the carpenters to work in the woods to select timber fit for the construction of the boat in which we were to proceed on our voyage of discovery.

On the 29th they began their work in earnest, notwithstanding the rain which poured down incessantly. This western extremity of the lake is so walled in by the mountains which bound it on both sides that the sun can hardly reach it, and the consequence is a perpetual state of wet and damp; nothing can be more *triste*. On the 31st M. Lenglier arrived, but with only three of the peons, the rest having lagged behind in spite of all his remonstrances.

January 1, 1863.—No cessation of the rain, and an atmosphere most depressing; a bad beginning of the New Year. I

was anxious with M. Lenglier to give the men some amusement in celebration of the day, but one of their own party, the man who had been left behind to take care of the goats, saved us that trouble by commencing a never-ending narrative, in justification of his alarm at having been left alone, of the wonderful pranks of the hobgoblins and spirits of the mountains amongst the poor woodsmen and others who venture into their domains. Whilst the carpenters worked hard at the boat I packed up the specimens of rocks and plants which I had collected, to be sent back by Gomez and the peons, who were to return to Puerto Montt. The provisions also for the voyage were laid out and repacked, chiefly consisting of roasted maize and dried beef (*charqui*), both of which are articles admirably adapted to meet the wants of travellers, especially when prepared and cooked by natives in their own fashion.

On the evening of the 3rd the boat was reported as ready for launching, the carpenters having worked unceasingly for six days to complete her. She measured 25 feet in length by 7 wide, very flat at the bottom, and intended not to draw more than 12 inches of water when afloat. We named her "*the Adventure*," with all due ceremony, amidst the cheers of the whole party and hearty wishes for her success. The guitar and flageolet provided abundance of merriment, in the absence of any better band of music; whilst the repeated echoes of a musket-shot amongst the surrounding rocks might well have been taken for a general salute upon the occasion.

We were to have embarked early on the morning of the 4th for the commencement of our voyage, but the weather delayed us till noon; in the mean time we had rather an affecting parting from Gomez and those of the peons who were to return to Puerto Montt. They had shared our toils and troubles very cheerfully, and we took leave of each other with the most kindly feelings. Who knew whether we should ever meet again! We got off about midday, the party consisting of myself and Mr. Lenglier, the carpenters, Mansilla, who was to act as steersman, and four men at the oars: seven persons in all.

We very soon found that we were overloaded and the cargo badly stowed; to make matters worse, as we advanced into the lake the wind rose and the waters became so agitated that twice they broke over the prow; we lost also our rudder, and but for the promptness with which Mansilla seized one of the oars to steer, we should have been driven upon the rocks. The sleet fell thick, and we suffered greatly from cold before we could find any place of safety to run into for the night; there we made a fire, cooked our supper, and laid down in our rugs to sleep as best we could.

The weather improving on the 5th we set to work to rearrange our stowage, and to lighten it by transferring some of the provisions

to two of the gutta-percha boats, which we then fastened together, and took in tow. The wind being fair, we hoisted our sail and held our course for the island (named Saint Pedro on the map), and which bounds the long narrow reach at the western extremity of the lake we had passed through. On emerging from this we had on our left a deep bay studded with islands, the largest of which we named *Isla Larga*; it was covered with verdure, and had a very different aspect from the rugged sides of the mountains we had just left.

In crossing it a puff of wind caught us, the gutta-percha boats filled with water, and we had but just time, before they sank, to save them by running into a small cove upon the island. By this accident we lost several bags of flour and charqui. After repairing damages as well as we could, we coasted along the northern side of the lake which trends eastward, and landed in a rather considerable bay, to which we gave the name of Port Venado, from an animal of the deer kind which we saw on the shore, and afterwards gave chase to without success. We were now fast leaving behind us the close damp atmosphere of that part of the lake which lies embedded in the mountains, and were entering a region possessing a much more clear and healthy climate. The vegetation also assumed a different aspect, and the ground appeared covered with thousands of flowers in every variety of colour. We all felt that we breathed more freely, and greatly enjoyed our run on shore. Looking from hence towards the southern side of the lake, where the Cordillera gradually falls off in gentle undulations, and before its entire termination in the Pampas beyond, we observed a very remarkable and decided break in the range. I asked myself, May not this be the entrance of that *Pass of Bariloche* which the first missionaries used in their journeys to and from Chiloe, and which they performed in the short space of three days? I have strong grounds for believing that it was; in which persuasion I was subsequently confirmed by a Pehuenche Indian, who told me that every year the Indians resorted to that part of the lake to collect stray cattle, and that he himself had taken no less than 50 beasts there, all of which were marked with the owner's brand. These cattle must have strayed from the herds of the German colonists, whose grazing grounds extend to the foot of the Cordillera, from whence they had doubtless escaped through the pass in question, and which probably was in the direction marked on the map.*

In rounding the furthestmost point of Port Venado the wind

* In a map of the coast drawn in 1792 for the Viceroy of Peru, by Moraleda, the *entrance* to the Pass of Bariloche is described as near the mouth of the River Petrohué, which runs into the Bay of Reloncavi from the Lake of Todos Santos, and which is stated in a note to be the pass by which the missionaries travelled from Chiloe to the Lake of Nahuel-Huapi.

freshened, and our gutta-percha boats were a second time submerged, obliging us again to make for the shore; where we determined to wait till sunset, when we had now learnt from experience that the wind generally moderated. Whilst the peons were engaged in spreading out our damaged provisions in the sun to dry, I took the opportunity of adding largely to my herbarium. At 7 in the evening we once more got under weigh, this time without the gutta-perchas in tow—they were, in fact, no longer required after the loss of the provisions with which we had first loaded them, and which had made a sensible diminution of our cargo. A gentle breeze favoured us, the moon rose splendidly, and we made considerable progress on our voyage, continuing our course along the northern shores of the lake. Believing, however, that we could not be very far distant from its eastern extremity, I thought it prudent once more to land the party, and give them some rest for whatever fresh efforts might be required to make next day.

Jan. 6.—The morning broke upon us with a glorious sunrise, and Mansilla, our pilot, drew my attention to a long stream of mist rising from the plain in the far east, which he felt satisfied must be caused by some river running out of the lake in that direction: there seemed, indeed, every reason to think he was right, and great was the excitement of the whole party in consequence. Not to leave the matter in doubt, I sent forward one of the men, Soto by name, who volunteered to walk to the spot.

It was, however, necessary in this to use some caution, as we had found evidences where we landed of the Indians having been lately there: the remains of their fires and tracks of their horses proved that their visit was recent. Nothing daunted by this, however, Soto started. All eyes were on the look out for him, and great was the rejoicing when he returned with a full confirmation of the fact that we were close to the entrance of the River Limay—for that it was the Limay we had no doubt. I proceeded at once with Lenglier to verify it; nor could I restrain the rest of the party from following us. After a walk of little more than three miles in a most broiling sun along the shores of the lake, we reached a point near which the stream ran somewhat rapidly out of it in a northerly direction. There was no apparent impediment to its entrance, and before the day was over we had moored our little vessel safely within it. The men were in great glee and delighted with their walk, in the course of which they filled their caps with wild strawberries, which was a great treat.

I wandered with Lenglier till dark in the vicinity of the river, and at no great distance from it determined, as I believed, the site of the old establishment of the missionaries (which was afterwards confirmed by accounts I received from the Indians). We had

thus successfully traversed the whole length of the lake of Nahuel-Huapi from west to east, a distance I calculated of about 40 miles—its average breadth may be from 12 to 15—and were about to enter upon the exploration of the River Limay, all that remained to connect our discoveries with those of Villarino, who had verified its junction with the great River Negro in 1782.

Success had so far crowned our efforts; but I felt that the descent of an unknown river, perhaps beset by rocks and snags, was a very different matter to the navigation of the broad and open lake we had traversed; albeit even that had not been effected without disaster. I determined to give the men a good supper, and ordered our last goat to be killed; the others had been already despatched and salted. We had a merry evening, and laid down to rest for our labours next day.

Jan. 7.—As may be supposed, we were all up early and busily engaged in preparing for our start. The bags of provisions were carefully re-stowed and the gutta-percha boats packed well away under the seats, with their tubes inflated to help to float us in case of accident. As we had now to trust only to our oars we set up our mast upon the shore, with a bottle attached to it enclosing a list of our party and the date of our arrival so far on our way. By 7 A.M. all was ready: each man had fastened on his life-preserver, Mansilla took his station at the helm, four men at their oars and one in the bow to look out for dangers ahead, whilst I myself, compass in hand, took my seat with Lenglier astern to give whatever orders were requisite, and to note down such observations as we could in our passage down the river. Three lusty cheers, and we were off. For some distance we found the river considerably agitated—the natural consequence of such a body of water rushing from the lake through a comparatively narrow channel; but as we advanced it became more and more placid and the stream less rapid. The water was very clear and we could see, at a depth of 3 or 4 feet, the bottom strewed with large boulders. Its width might be about 80 yards, and the current about 7 miles an hour. The course of the river was, with little variation, nearly due north. We passed some islands covered with bright-looking shrubs, and proceeded without accident till about 10 o'clock, when we arrived at a long wide bend in the river. We ought to have followed this with the stream; but, to save distance, we unfortunately endeavoured to row across it, and ran aground in shallow water, springing a leak in our bottom. We were able, however, without much difficulty to haul the boat ashore, and being sufficiently provided against such accidents, repaired the damage. In little more than a couple of hours we were again afloat; but it was hard work for the carpenters under a suffocating heat, and mosquitoes enough to drive us all mad. I was myself also under some apprehension lest

the noise of our hammers might at any moment bring down upon us the Indians, whose lands we were now traversing. For an hour after there was little variation in the force of the current or the uniformity of its bed; but it then became divided into three or four distinct channels, with little apparently to choose between them: unluckily we followed one in which the water suddenly shallowed, and we again ran aground. Instinctively the men all jumped out to lighten the boat, and dragged her by main force into a deeper part of the stream. But we had hardly taken our places again when we found ourselves in the midst of other perils: instead of the low loamy banks which so far had bounded the river, steep rocks now rose on either side, between which the course of the stream became very winding; and though the current and deepest water followed the bends, we found them so beset with rocks that we thought it safer to cut across them and make our way through the shallows by force of rowing wherever we could. In this manner we passed several rapids, and had some very narrow escapes. About four o'clock in the afternoon our situation had become very critical: the bed of the river was much narrower, and studded with rocks. It seemed a miracle that we passed safely through them and over a formidable rapid beyond, which nothing but an almost superhuman effort on the part of our oarsmen could have pulled us through. This danger passed, I ran the boat into a small cove in a bed of the river and landed to obtain a short respite from our labours.

It perhaps may be asked why, before proceeding further, we did not make some effort to reconnoitre the course of the river from its banks, in order to ascertain the practicability of the further passage down it. But I knew we were now in the territories of the Indians, and I was unwilling to leave the river lest they should fall in with us: we were on foot and without any means of avoiding them had they discovered us. Besides, the distance which remained for us to accomplish before reaching the River Negro was very small, for I calculated we had gone 75 miles since the morning, and were, therefore, close to the point which Villarino had reached from the Negro without any impediment so far. There seemed no ground for anticipating any fresh difficulty.

We therefore once more launched into the stream, which for a short distance though rapid was smooth, and we glided down it with tolerable security, till on rounding a point about half an hour afterwards we beheld to our dismay the whole river before us as one foaming torrent, boiling with whirlpools, and breakers bursting over rocks in all directions. We made a violent effort once more to gain the land, but in vain; the strength of the current carried us into the midst of the stream, by which we were hurried along, our frail bark no longer obeying the helm, and the oarsmen ren-

dered powerless even to keep her head on. She was carried sideways down the rapid, and striking a sunken rock, at once filled with water and was instantly turned completely upside down. From my own position with Lenglier in the boat, we fell under her when she was capsized, caught as it were in a trap. My life-preserver caused me to rise, but it was only to knock my head against the inside of the boat; fortunately she drifted a little, which set us free, and I struck out for the shore, which I succeeded in reaching and climbed up by some boughs overhanging the river-side. Lenglier and the men managed to get upon the boat's bottom, where they remained till she was carried some distance further down and became firmly fixed between two rocks, when they also managed to reach the shore. The river here was about 80 yards wide. As soon as the men were able to think of anything they set to work to collect whatever was washed ashore from the wreck, in which we were more fortunate than might have been expected under the circumstances. Some of the bags of flour and charqui, and a tin-case containing chocolate, relieved me of any anxiety as to the supply of our immediate wants. My knapsack also, and that of Lenglier, containing some useful articles, were saved, and with them a copper matchbox, which had fortunately proved water-tight and furnished the means of lighting a fire at once, which of all things we most needed, thoroughly drenched as we were, and shivering under the cutting wind from the Cordillera. Nor must I forget the bag containing my guitar and flageolet, the preservation of which proved in the sequel of more importance than could have been imagined. My companions, now completely exhausted, were soon asleep round the fire; but I could think of nothing but the bitter disappointment of my hope of reaching the Negro when almost in sight of it. However I could not but be thankful for our preservation, and that we had accomplished so much.

Jan. 8.—At daybreak we renewed our search along shore for such articles as might have drifted there from our unfortunate boat, which Mansilla and two or three of the men contrived to reach and found firmly fixed in the same position as the evening before. Mounting upon the keel, however, they broke open her bottom and were able to get out several bags of provisions, the carpenters' tools, the case with my papers, some portion of the gutta-percha boats no longer serviceable, and sundry minor articles which had been packed in the seats, amongst which, luckily, were some beads and toys for the Indians, which did us good service afterwards. Whilst we were thus busily engaged we were startled by the appearance of two Indians on horseback, whose look of stupid amazement at the unexpected discovery of a party of strangers in such a place I shall not easily forget. I went forward at once to meet them, and they dismounted. The only Indian word I could recollect with which

to address them was "*Peni*—brother." They answered, "*Peni*." I led them to our bivouac and gave them some flour and charqui, the latter of which they ate with evident gusto. I mentioned the name of Llanquitré, a cacique who had formerly lived in those parts; whereat they expressed considerable surprise, and began talking to each other, and soon after expressed by signs their wishes that I should accompany them to the tents of Paillacan, their cacique. I replied, in the same manner, that I would do so as soon as we had finished collecting the *débris* of the wreck; whereupon they sat down to watch our proceedings, every now and then breaking out in expressions apparently of commiseration for our misfortune. It was some satisfaction to me that they seemed disposed to show rather a kindly feeling than otherwise for us in our distress, since it was manifest that now we had no alternative but to trust ourselves to their guidance to enable us either to recross the Andes, or to find our way through the Pampas to the settlements of Buenos Ayres.

Dividing amongst the men the provisions and such of the articles we had saved as I thought might propitiate our new acquaintances, we bade adieu to the last remains of our hapless "*Adventure*" and prepared to follow our dusky leaders. They had with them two spare horses, on the bare back of one of which they persuaded me to mount. Lenglier preferred walking, and gave up the other animal to Vera, one of the men who had hurt his foot in escaping from the wreck. I had nothing on but my shirt and trousers, with a kind of turban to protect my head from the sun, which I had made out of the green bag in which I had kept my guitar. As soon as I was mounted the Indians were impatient to be off, and began to manifest considerable disgust at the slow pace of the party on foot. As we went along the river-side I was enabled to observe that the stream had resumed its ordinary regularity: there seemed to be an end of the rocks, which were replaced by small islands covered with low shrubs, between which the current appeared to run so smoothly as greatly to aggravate my regrets that we had failed in passing further down. In all probability it would have been perfectly practicable some months later in the year, when, as Villarino found, these rivers become swollen by the periodical rains.*

On reaching a small rivulet, which crossed our path, the Indians dismounted to make a meal of some of the flour I had given them. Their cookery was simple enough; throwing a handful of flour into

* Villarino entered the same river, the Rio Encarnacion (as he named it), on the 25th March, at which period he found it at its lowest, though with about 5 feet water as far as he went up. Upon his return from the Catapuliche (the opposite river), early in May, the waters had risen so much after the rains, that every rapid he had met with in going up the River Negro had disappeared in one broad and deep stream, which carried him in three weeks a distance which had required six months to surmount against the current in the dry season.

a piece of raw hide, they poured upon it some water, which they stirred up with their fingers till it became a paste fit for eating. This gave time for the party on foot to come up with us, and Lenglier, who was an inveterate smoker himself, offered them some tobacco, but found to his surprise that they had no notion of using it. After a short rest a little further on, the elder of my guides left us, and galloped on, as far as I could understand, to give notice of our coming. The only incident which broke the monotony of our silent journey was the rush past us of a herd of guanacoës, startled at our approach, and scared by the shouts of my companion. At last we came in sight of some yellow tents in the distance, and a man in the garb of a Spaniard galloping up addressed me in that language, saying he was sent to conduct me to the cacique who was expecting me; and adding, for my comfort, that I had the bad luck to have fallen into the hands of one of the greatest brutes of all the Pampa tribes. On reaching the tents I was surrounded by a group of women and children, who stared at me in stupid astonishment. No time was lost in ushering me into the presence of old Paillacan, the most villanous-looking savage I ever beheld. He was evidently half-intoxicated; his long dishevelled hair hung about his ears, and his eyes were red from drinking, and glared like those of a wild beast. He received me in the rudest manner, refusing to shake hands with me, and assuming altogether such a threatening attitude that I was taken quite aback. Making the Spaniard sit down to interpret, he began a long-winded discourse in a highly excited and angry tone; the upshot of which was to ask me, how I, a Chilean, had dared to come into the lands of the Indians without their special leave, and whether I was not aware that he might put me to death for such a piece of audacity. The length of his speech fortunately gave me time to recover from my first impressions, and to consider my reply, which, knowing the hatred and jealousy of these people towards all Spaniards, I began by saying I was not a Chilean, but an Englishman travelling from that country on a matter of business to Buenos Ayres: that I had come down the River Limay hoping to reach the Negro, which I understood was the shortest way there; that I had not come as an enemy, but as a friend, loaded with presents for himself and any of the caciques of the Pampas I might meet with; that he must have heard from his own people of the wreck of my boat, in which I had lost the presents with everything else belonging to me, but that, if he had seen them, he would have been satisfied with my generosity. Then opening my knapsack I took out some of the strings of beads and other trifles which I had taken care to bring with me. I said that, though these were trifles, they would prove to him the truth of what I had told him, and that I had not come empty-handed. I now

trusted, I said, to his help to enable me to continue my journey, at least to Carmen on the River Negro; which, if he would promise me, it was my intention first to go back across the Cordillera to Valdivia to get what I wanted for myself, and to purchase for him and his family such presents as would delight him to his heart's content. As I proceeded I watched with some anxiety the countenance of the old savage, and was not a little relieved to see it gradually exhibiting more and more symptoms of humanity as I raised my voice to dilate upon the importance of the presents I intended for him. He seized upon the beads and fillets which I had produced, and commenced distributing them amongst the women and children about him; who in their joy became excessively noisy and uproarious. In this confusion the happy idea occurred to me of giving them a tune on my flageolet. The effect upon the whole party was instantaneous: old Paillacan took the instrument into his own hands, and was as pleased as a child when he found he could make a noise with it. I saw that I had nothing more to fear; the flageolet had settled the business. A young Spaniard, Argomedo by name, who told me he had been seized by Paillacan on returning with some Indians to Chili from the settlement of Carmen, and was kept to wait upon him and his wives, brought me some horseflesh for my supper, and afterwards gave me half his bed—a dry hide covered with sheepskin. He said it was fortunate for me that I had found the cacique alone, his people being out on a hunting excursion beyond the River Negro; had they been at home, he said, I should have had them all to deal with and to satisfy.

Jan. 9.—At daybreak I was summoned to a formal conference by Paillacan, whom I found in a much more sober state than the day before. After a long dissertation on the exclusive rights of the Indians to the territories I had passed through, he said he had been considering well what I had told him, and had come to the determination to forgive my offence in entering his lands without leave, upon condition of my proceeding at once to Valdivia to bring him the presents I promised him, and that on my return with them he would allow me to accompany some of his people to Carmen, who were going there to sell skins. He insisted, however, on my leaving two of my people with him in the mean time as hostages for my coming back; and ended by making me swear by the Sun that I would faithfully perform all I had promised him. The son of Paillacan, Quintunahuel, who had returned in a state of beastly intoxication the day before from a drunken bout with another tribe, was no sooner apprised of the compact his father had made with me, than he sent for me to beg I would not omit to bring some suitable present for him also, the rather as he proposed accompanying me himself to Carmen. But

of all these beggars the worst was Paillacan's head wife, Pascuala, a Tehuelche Indian, born near Carmen, who spoke Spanish, and was incessant in her importunities for the articles we had saved from the wreck; and, when I had no more to give her, in asking me to bring her everything she could think of on my return from Valdivia. I was obliged to satisfy her as well as I could in order to be sure of getting anything to eat, for I was soon made aware that she was sole controller of Paillacan's household.

Jan. 10.—About noon Lenglier made his appearance with the rest of our party, whose non-arrival the day before caused me no little anxiety. It appeared that after I left him he had lost our track, and, in doubt which way to turn, had gone back to the wreck, where he was found by Paillacan's people, who had been sent in quest of them. It was fortunate he did so, for it enabled him to recover some further articles which had been washed ashore from the boat; which proved very acceptable in our condition, not only for our own use, but as gifts to the Indians; especially a bundle of blankets, and two more bags of flour very little spoiled. I would have started the same day, but the peons were too tired, and I was obliged to wait till the next.

Jan. 11.—In the morning we were again delayed in consequence of the guides who were to accompany us not having recovered from the effects of a drinking bout with old Paillacan the night before. About noon, however, we got off; two of the peons having volunteered to remain till I came back. Mansilla and the two remaining peons walked on foot, their clothes in tatters; I and Lenglier were on horseback, fortunate to have blankets for our saddles, which at night might serve us as bedding. The only provisions we started with consisted of what flour we had been able to save from the rapacity of our late hostess Pascuala, and a sheep which she gave us at parting, upon my promise that she should be amply repaid for her generosity on my return. And so we left old Paillacan's camp at Lali-cura, as it was named. The happiest individual amongst us perhaps was Argomodo, the young Spaniard I have already mentioned, whose liberation I succeeded in obtaining, and who was but too glad to be allowed to join us on his way home.

Our road onwards ran through a long plain intersected by the River Caleufu, which we had to cross where the water was breast high. Towards evening we arrived at the camp of the cacique Huincahuel, very pleasantly situated in a fertile valley full of rich pasturage. This cacique gave me a very different reception from old Paillacan's, conducting me at once to his own tent, and treating me with all the hospitality in his power. His tribe is much more numerous than that of Paillacan, and I was agreeably surprised to find how many of his people could speak Spanish more

or less. Here, too, for the first time, I saw Indian women at work sewing, with a cobbler's awl for a needle and the sinews of ostriches and horses for threads, and yet with these materials their work was neat and pretty. The cacique himself was under some excitement in consequence of the arrival of a messenger from the authorities of Buenos Ayres with an invitation to the tribes to send deputies to Carmen on the River Negro to treat for the terms of a general peace. From this man, who had come from Carmen, I obtained some useful information as to the intervening country. We were here not far from the River Chimchuin, which Villarino calls the Huechum or Catapuliche, the northern affluent of the River Negro, which he ascended for some distance. I found, upon inquiry, that some of the people of this tribe had a traditional remembrance of his visit to those parts, as they said, in boats, with big guns, and very hard bread (biscuits) to eat.

Jan. 12.—As the Peons travelled more slowly on foot, I sent them on at daybreak, remaining myself a few hours longer with Huincahué, who had begged me to write a letter for him to the Judge of Quinchilla in Chili, regarding one of his men who had got into difficulty for stealing a horse. I parted with this cacique with the most favourable impressions as to his real wish to be on the best terms with his Christian neighbours.

Our way now was towards the Cordillera, and we began to find, in consequence, a sensible difference in the temperature. Our only halt this day was on the River Quem-quem-tru, where we rested for an hour, and then went on till nightfall, when we reached a plantation of maize, beans, and potatoes, the property of a rich Indian, Antinao by name, whose tents our guides told us were some little way further on. There we laid down for the night under some wild apple-trees. Our peons had missed us on the road, and, as we found afterwards, had gone on to Antinao's camp, where he treated them so well that they got as drunk as the Indians, and so drunk as to promise him that if I would leave them with him till my return from Valdivia, they would build him a wooden house like those in Chili,—the great object of his ambition. Finding them in the same humour next day, when we came up with them, I made no objection; and so our party was again diminished by two more of our men, Lenglier and one of the peons only being left with me, besides the young Spaniard, Argomedo.

Jan. 13.—We had not gone far beyond Antinao's tents, when we found ourselves suddenly surrounded by a party of about fifty Indians, armed with lances and swords, who insisted upon our going with them to an encampment in the vicinity, where their caciques they said were already holding a conference respecting us, having had notice of our approach, as I heard afterwards, from a

mischievous rascal with whom I had had some dispute, and who in revenge had stirred up these Indians to annoy us. The display of force was the most formidable we had witnessed amongst these people, and might have alarmed us for our safety if we had not now had some experience of their manœuvrings. The caciques received us with their usual pompous gravity, and, sending for an interpreter, began a long and tiresome harangue, and questions as to the motives of our journey, and the presents I had brought. In fact it was a repetition of the old story, and an attempt to intimidate and to get from us whatever they could. We escaped at last with the sacrifice of nearly everything we had left. They carried off our blankets, which we had left under Argomedo's care during the conference, and stole Lenglier's hat, which I only wondered he had kept so long, for it had been an object of envy with every Indian who had seen it, and with difficulty had been saved from the clutches of old Paillacan. We consoled ourselves, however, with knowing that we were now fast approaching the Chilean boundary, where our losses could be easily replaced. This was our last adventure worth mentioning with the Indians.

Soon after, we found ourselves fairly in the Cordillera, and passing the Cerro Trumbal, wended our way along the northern shores of the Lake Lacar (the waters of which run towards the Pacific), and where we established our bivouac for the night. (This lake is 1749 feet above the sea, and 15 or 16 miles in length, by 3 or 4 wide.)

In this part of the Cordillera of the Andes the "Linea divisoria," or parting of the waters, leaving its general direction north and south, makes a great bend or inflection to the eastward, of nearly 50 miles, with a remarkable depression, encircling the great lake of Lacar, which, although thus in appearance situated on the eastern side of the range, in reality discharges its waters into the Pacific. Nevertheless, its eastern extremity is not more than 12 or 15 miles from the sources of some of the tributaries of the Atlantic. The Lake of Lacar is united with the Lake of Perihuco, which latter is drained by the River Callitué, which falls into the Shoshuenco from the north. Both these run together into the Lake of Rinihué, the drain of which is the River of Valdivia. It is stated upon undoubted authority that three Indians, who had crossed the Andes from Valdivia, finding upon their return the Passes blocked up by snow, managed to reach on horseback the Lake of Perihuco, where, building a canoe, they passed down the River Callitué into the Lake of Rinihué, to the astonishment of the people of Valdivia, who at first would hardly believe in the possibility of opening such a communication.

The next day, the 14th, we passed through a tract of forest, at the end of which stand the ruins of an old Spanish fort. We

reached a river, over which we were ferried in a canoe, the horses swimming across it, and, coasting the small Lake of Queni (1854 feet above the sea) about eight in the evening, reached the beginning of the Pass of Ranco, or Lifen, over the Andes, where we halted for the night, but could get little sleep for the cold.

On the 15th we effected the passage with some difficulty. The highest point is 2760 feet above the sea, as I ascertained on my subsequent return over it. This was the pass by which Villarino had hoped to reach Valdivia; it is only passable four months in the year. The descent on the Chilian side was very steep, and slippery from the snow, and obstructed by fallen trees, which made it the more difficult. I afterwards dismounted and walked on till we halted for the night at the house of a Christian Indian, where we were kindly taken in, and got a supper of boiled beans, which to us seemed a delicious repast. On the 19th I entered Valdivia, just forty days after we had started from Puerto Montt.

In the month following it appears that Don Guillermo Cox again started, in fulfilment of his promise, loaded with presents for the Indians, and especially for old Paillacan, on whom he principally relied to enable him to prosecute his journey to Carmen. But after passing about six weeks in exploring that part of the Andes which is situated opposite to Valdivia, and in visiting the tribes located on their eastern slopes, by whom he was in general kindly received, he was suddenly obliged to retrace his steps, in consequence of an unexpected outbreak against him on the part of some of the most influential of the caciques of the Pampas beyond, who had come to the determination to use force if necessary to prevent his proceeding through their lands. The work he has since published in Chili,* and of which he has sent a copy to the Geographical Society, contains full details of very great interest, not only regarding the physical geography of that part of the Andes, but as to the habits and customs of the Indians, which he had ample means of studying during his stay amongst them. So far from being discouraged, Señor Cox, in a letter to Sir Woodbine Parish, expresses his determination to renew his attempt to pass down the River Negro, and so carry out his first intention; and should he succeed in this, he says he shall not rest till he has explored the whole length, as well as breadth, of Patagonia, to the Straits of Magellan.

In the mean time Señor Cox is strenuous in urging upon the

* 'Viage en las Regiones Septentrionales de la Patagonia 1862-1863,' por Guillermo Cox. Con un Mapa. Santiago de Chile: Imprenta Nacional, Nov. 1863.

Chilian Government the importance of verifying and reopening the old Pass of Bariloche, by which the Jesuits in three days were able to reach the Lake of Nahuel-Huapi from the coast, and of extending the German settlements of Port Montt to the borders of that lake, which by good management he believes may be made the means of establishing friendly relations with the Indians, which would soon be found mutually beneficial. In connexion with such a settlement at Nahuel-Huapi, he points out the facilities it would offer for the re-establishment of a mission, for the express object of reducing the Indians to Christianity, to which he believes they will now be found by no means so disinclined as may be imagined. The Christian women amongst them who have been made captives in their wars with the Buenos Ayreans, are always held in particular estimation, and seem to have taught their masters to regard baptism as an honourable distinction.

XV.—*Details of a Journey through part of the Salado Valley, and across some of the Argentine Provinces.* By THOMAS J. HUTCHINSON, F.R.G.S., &c., H.B.M.'s Consul for Rosario. (Communicated through the Foreign Office.)

Read, May 9, 1864.

THE Rio de la Plata to the south, and the Amazons towards the north, constitute the aortas of navigation in the South American Continent. Of these the former seems to me the more important in a practical point of view, chiefly because flowing, for the greater part of its course, outside the southern tropic, through the most salubrious country, and the richest virgin soil, its advantages deserve to be known to the European immigrant and capitalist.

The Plata, with its tributaries, has been well and ably described since its discovery by Don Juan de Solis, in A.D. 1515. With the excellent map of Sir Woodbine Parish, the surveys of Commander Sullivan, R.N., published by the Admiralty, and the extensive chart of Captain Page, U.S.N., attached to his book, it might seem that nothing remained to be described. But having visited certain parts, not touched at by either of these gentlemen, particularly in the Upper Salado district, I hope to be able to add a mite or two of information in reference to some as yet but partially known localities of the Argentine Republic.

Twenty-four miles above Buenos Ayres, which is 200 miles distant from the embouchure of 150 miles wide between Points